What is claimed is:

1. A method of storing optically generated charges by optical signal in a solid state imaging device comprising the steps of:

(i)preparing the solid state imaging device comprising a unit pixel including

(a)a photo diode formed in a well region, and

(b)a field effect transistor for optical signal detection formed in the well region adjacently to the photo diode, comprising

(1)a channel region formed on the surface layer of the well region between a source region and a drain region, and

(2)a carrier pocket being provided in the well region under the channel region in the vicinity of the source region;

(ii)generating optically generated charges in the photo diode by light irradiation;

(iii)transferring the optically generated charges to the carrier pocket while accumulating movable charges of the same conductivity type as that of the source region over the entire channel region;

(iv)storing the optically generated charges in the carrier pocket while accumulating movable charges of the same conductivity type as that of the source region over the entire channel region.

2. The method of storing optically generated charges by

an optical signal in a solid state imaging device according to claim 1, wherein the field effect transistor for optical signal detection is a depletion type.

3. The method of storing optically generated charges by an optical signal in a solid state imaging device according to claim 1, wherein movable charges of the same conductivity type as that of the source region are accumulated over an entire surface layer of the well region including the channel region at least in the steps of transferring and storing.

4. The method of storing optically generated charges by an optical signal in a solid state imaging device according to claim 1, wherein a current is flowed to the field effect transistor for optical signal detection to read out a change in a threshold voltage after a period when the optically generated charges are transferred to the carrier pocket to be stored therein.

5. A method of storing optically generated charges by optical signal in a solid state imaging device comprising the steps of:

(i)preparing the solid state imaging device comprising a unit pixel including

(a)a photo diode provided with

(1)a first well region of a first conductivity type, and

(2)an impurity region of a second conductivity type formed on the first well region so that

the photo diode has a buried structure, and

(b)a field effect transistor for optical signal detection placed adjacently to the photo diode, provided with

(1)a second well region of the first conductivity type connected to the first well region,

(2)a source region of the second conductivity type formed on the second well region,

(3)a drain region of the second conductivity type formed on the second well region and connected to the impurity region,

(4)a channel region formed on a surface layer of the second well region between the source region and the drain region,

(5)a channel doped layer of the second conductivity type formed on the channel region,

(6)a gate electrode formed on the channel region by interpolating a gate insulating film, and

(7)a carrier pocket of the first conductivity type being provided in the second well region under the channel region in the vicinity of a source region;

(ii)generating optically generated charges in the photo diode by light irradiation;

(iii)transferring the optically generated charges to the carrier pocket while accumulating movable charges of

the second conductivity type over the entire channel region upon holding a potential of the gate electrode such that the channel region comes into an accumulation state where the channel region is filled with the movable charges;

(iv)storing the optically generated charges in the carrier pocket while accumulating movable charges of the second conductivity type over the entire channel region upon holding a potential of the gate electrode such that the channel region comes into an accumulation state where the channel region is filled with the movable charges.

6. The method of storing optically generated charges by an optical signal in a solid state imaging device according to claim 5, wherein the field effect transistor for optical signal detection is a depletion type.

7. The method of storing optically generated charges by an optical signal in a solid state imaging device according to claim 5, wherein movable charges of the second conductivity type are accumulated over an entire surface layer of the first and second well regions including the channel region at least in the steps of transferring and storing.

8. The method of storing optically generated charges by an optical signal in a solid state imaging device according to claim 5, wherein a current is flowed to the field effect transistor for optical signal detection to read out change in a threshold voltage after a period

when the optically generated charges are transferred to the carrier pocket to be stored therein.

9. The method of storing optically generated charges by an optical signal in a solid state imaging device according to claim 5, further comprising a plurality of the pixels arranged in rows and columns, wherein the optical signals are stored in the respective pixels by supplying different scanning signals to the mutually connected gate electrodes of the field effect transistors arrayed in the same row, the mutually connected drain regions of the field effect transistors arrayed in the same row, and the mutually connected source regions of the field effect transistors arrayed in the same column.

10. The method of storing optically generated charges by an optical signal in a solid state imaging device according to claim 9, wherein the storing of the optical signals into the respective pixels and the reading-out of the stored optical signals are controlled by a vertical scanning signal driving scanning circuit for supplying a scanning signal to the gate electrodes in the raw, a drain voltage driving scanning circuit for supplying a drain voltage to the drain regions in the raw, a signal output circuit for storing voltages of the source regions in the column and further outputting an optical signal corresponding to the voltage of the each source region, and a horizontal scanning signal input scanning circuit for supplying a scanning signal for controlling a timing

of reading out the optical signal.